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What We Do for Each Other: Assessing Disparity in K-12 Education Across the State of Arkansas

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SENIOR THESIS APPROVAL

This Honors thesis entitled

"What We Do for Each Other: Assessing Education Disparity across K-12 Education in the State of Arkansas"

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WHAT WE DO FOR EACH OTHER: ASSESSING DISPARITY ACROSS K-12 EDUCATION IN THE STATE OF ARKANSAS

AN HONORS THESIS BY NOAH SANDERS

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CHAPTER I

INTRODUCTION

In 1779, Thomas Jefferson approached Virginia legislature with his bold education plan for the American experiment. He called for a "more general diffusion of knowledge." Bypassing the centuries-old nomenclature, the essence of his goal was something similar to the British method of schooling, sprinkled with committees and boards to make sure the best students find their way to more and more schooling (Jefferson). The American meritocracy would start small, or at least, with their smallest citizens. He poured endless examples, down to which cities could band together as cohorts, which people would serve in the roles, what the roles would be, and more. It seemed to be foolproof.

Despite this piece of history taking place before the Constitution was pieced together, my mind raced toward the end of the story—*did the bill pass.* Short answer, no. Long answer, no. Why? The bill bumped up against the ideal that the new nation had been founded upon: equal opportunity. Jefferson, for all his successes, looked like a buffoon and an upper class elitist. How could Virginian youth be bared, regardless of where they lived or what their parents do, from pursuing a path to great education? Nearly two hundred and fifty years later, the question of "what opportunity looks like" circled back around.

Many follow-ups have been asked in the process. Is there a divide between urban and rural schools? How can southern states and their schools catch up to the coastal neighbors? Are opportunities truly equal when families do not have a real choice where they send their kids to school? President George W. Bush seemed to have the perfect solution to the problem, and he named that solution *No Child Left Behind* (NCLB).

The former Texas governor and principal owner of the Texas Rangers baseball team ran a campaign focused on bettering the American education system. He saw many of the same problems, especially the achievement gap between schools across the country, and hoped to close it ("No Child Left Behind"). The goal for the bill was for all American students to be reading on at least a third-grade level. If schools were not doing this, the federal government would withhold funding. Sounds like a good idea, right? This should encourage teachers to work harder and push students to engage! Only NCLB was a colossal failure. Some of the standards were too high to reach. No amount of teacher success could raise the production to reach the nationally set goals and targets. The bill, in the years since, looked like it had racially targeted certain states and districts (Lawrence, 700). The burden was too much.

As is the case for many government programs, no one was threatened. Districts did not lose any money. Schools were safe if they did not meet the requirements by the given year. So, what happened? The goals were pushed back under the Obama Administration, and eventually, schools stopped bothering once the President Obama signed the *Every Student Succeeds Act* (ESSA). Bush's goal to save the American student fell apart (Chukka). And yet, despite *NCLB's* failure in shrinking the achievement gap, there was a little known success. After the passage of ESSA public schools are now required to publish information year after year, everything from test scores by grade to disciplinary actions. Whether one is researching for their honors thesis or deciding between schools before moving into a new city, voters, parents, and students can find out the truth behind school performance.

In the state of Arkansas, however, there is a certain phenomenon plaguing many parts of the country: schools are not performing. Quite simply, the tax dollars that go into funding the public education of tomorrow's leaders seems to not be working out as Arkansans had hoped. Since the 1980's, there has been an increase of private and charter schools, led by churches and

other crowd-funded entities, and they began popping up across the state shortly after. In response, there were many public policy questions. Who is allowed to attend these schools? Is it equal opportunity? Is it even constitutional? Many decades later, the private elementary and secondary schools have become established institutions, slowly adding more and more students, taking away from the public schools. Now, it is 2023, and the state of Arkansas spent much of 2020 and early 2021 deciding when to get the students back in schools, while private schools and homeschool co-ops thrived (Musaddiq).

In this project, I will be surveying factors that led to the downtrodden education in much of the state. In the recent gubernatorial race in the state of Arkansas, two different approaches, pointing to an increasingly large ideological divide in education, took root. Chris Jones, the Democratic candidate, made education one of his biggest selling points, taking the side of expanding to universal pre-kindergarten in the state instead of addressing the ills of the current public school system. Sarah Huckabee Sanders, the Republican candidate, also moved into the education policy sector as her focus, unveiled her Arkansas LEARNS plan.

The plan aims to improve literacy, safety, and increase pay for the average Arkansas teacher up to $50,000, but it also pushes for parents to have an increased choice in their children's schooling, allowing for rural districts to continue to suffer with the potential for better students to move toward better performing schools. Where then, could the solution be found? Are the two candidates looking at the same data? It seems that both candidates to some degree implied that the current state of Arkansas public education was a lost cause. In the wake of the pandemic, learning loss continues to be an issue (Duncan).

Last summer, I spent a week at the American Enterprise Institute under the direction of Dr. Michael McShane with the intent of figuring out the American policy landscape in education. McShane labeled the seminar "K-12 Education: The Foundation of American Democracy,

Society, and Economy." After my months of research, reading, and writing, I agree that education is the ground floor for American society. Without education, where would we be as a country?

What is more important to understand in the policy debate is that education is not *everything*. Teachers and administrators bare a large burden in shaping and coddling the young American minds, without a doubt, but they are not alone in the fight. Mothers, fathers, grandparents, aunts, and uncles also play a part in shaping the minds of their children. The experiences, provisions, and nature in which children grow up play a part in where the mind will end. If this was not the case, the nature/nurture debate would not persist in psychology and sociology, but it unfortunately has.

Public education has become a hot bed for outsized political issues for policymakers across the country. Conservative legislatures in Florida and Texas are focused on banning books that contain elements of Critical Race Theory, black studies, and gender ideology (Shearer, 29) while other liberal legislatures in California are striking down books that have elements of racism (Stiles).

Education has become a battleground for the modern ideological culture wars, and like it or not, these battles do little to effect the *success* of the students. Plans like Jefferson's "Public Diffusion," Bush's "No Child Left Behind," and Huckabee Sanders's LEARNS Act hope to better the students through a variety of methods. Toward the end of this paper, I will use the data to interpret what is coming to Arkansas education now that LEARNS has become law.

CHAPTER II

STATISTICAL METHODS AND HYPOTHESES

Description of Statistical Methods Used

For the first set of data, I utilized data for tenth grade students in the 2020-21 school year, I surveyed thirty-four schools chosen at random, and the data from the Arkansas Department of Education Data Center test scores across the subjects of English, Math, Science, and Reading. While, I admit, the amount of data poured in section is scarce; it might serve as a microcosm for the rest of the state.

To combine the statistics for a simpler measure, I combined the percentages of students who were meeting and exceeding the expectations set out by the Department of Education (ADE Data Center). This allowed for each school to be evaluated based on what percentage of their students were meeting and failing to meet the expectations. The schools were selected with no prior knowledge of their test scores, salary data, crime data, etc.

Concerning crime data, CrimeGrade.org was able to split crimes per one thousand persons by zip code (Crime Grade). I used the zip code where the high school resided, which took up much of the school's attendees as well. Concerning income, I looked to incomebyzipcode.com, the school grounds zip code was documented (IncomeByZipcode). Arkansas Department of Education data center provided each school's beginning and top salary among teachers. WalletHub provided each school district in Arkansas and their state funding per student compared to the median income and gave a score assessing the disparity between the two data points (WalletHub). The Arkansas Department of Education provided the exact number of students who participated in the standardized tests (ADE Data Center). With varying crime rates,

student populations, and median incomes, I believe this will display an accurate reflection of the disparity that is plaguing the state of Arkansas given the number of schools that I implemented in the study.

I hoped to address factors using data traced inside and outside of the school walls. For the first experiment, I looked to crime rates, median income, and factors that cannot be quantified using test scores. In the second chapter, utilizing the same data center from the Arkansas Department of Education, I documented the findings from data inside the school that have nothing to do with how the students are performing. What percentage of the student body is on the free or reduced pay for lunch program? How are the schools taking disciplinary actions toward their students and how often? How many students withdrew from the school and for what reason? I hoped that these categories would provide a somewhat accurate depiction of how schools are behaving, how much the students rely on the school to supply their needs, and whether or not it accomplishes the goal of the school—that is, creating effective citizens in the public marketplace.

The reason for these factors was to discover whether the location of the school played a part in student performance. Are schools reflective of their society or vice versa? As a student of public policy, the idea of government being responsible for every waking need can be daunting, but it is reality for thousands of young students in the state. It is far from a perfect scenario, but the experiments aim to provide some sort of answer to the war on education. By the end of the study, the results may lead to conclusions that are disappointing for policymakers uphill battles that many take more years than they are allotted.

For the second data set, researching the disparaging factors within the schools, I returned to the Arkansas Dept. of Education Data Center to find data that come as a result of school culture and the surrounding area—percentage of students on free or reduced lunches, rate of

withdrawal, and disciplinary action. This time around, I used the data given by every school in the state. For free and reduced lunches, two hundred and sixty-one districts submitted data. For withdrawal, two hundred and fifty-six districts participated. Concerning disciplinary action, two hundred an forty-eight districts submitted data.

Development and Explanation of Hypotheses

Concerning the hypotheses for the first experiment will take into account many of the different communal factors that aid or disorient education. Five hypotheses were tested in the making of experiment one, moving between societal and governmental responsibility. My first hypothesis was that the higher the median family income in the area would be, the higher test scores would be. By my estimation at outset, as income increases, successful education should be climbing as well. This means for better facilities outside of school as well as inside the school.

All of the hypotheses would revolve around factors concerning the test scores, variables that go into the community that makes it. The second hypothesis is that as crime increases, schools will perform at a lower rate. Sometimes the crime is petty theft, and other times it's a double homicide. Either way, the people who commit those crimes are fathers, mothers, brothers, and sisters of students. Sometimes the students themselves jeopardize their education and commit the crimes. Regardless of who commits it, people suffer in the aftermath of a climbing crime rate. If crime rates are trending higher, success in education should be falling. More people are lumped into the mess.

The third hypothesis has to do with government assistance. State legislatures have to come up with formulas that produce the amount of funding per student in each school district. These are some of the most significant factors surrounding a child's education. Despite the role of the government being, according to the Constitution, to "provide a well-meaning education,"

the tests should show that the amount of state legislature funding bears no significance in the educational outcomes, meaning that government assistance in schools cannot overcome the societal and communal impacts in education. If all the government can do is subsidize the educating, nothing more or less, then the impact will not go very far.

The fourth hypothesis has to do with the size of the schools, and the schools with a greater number of students by and large will perform better in their test scores. More students call for more resources available to the district, and more teachers to educate the students and more administrators to preside over the operations on campus.

Schools have to attract talent to the classrooms, and high crime areas are not places where new teachers want to go, but teachers do care about how much they are getting paid. Where does the talent want to go, more often than not? Schools with better facilities and more economic opportunity, which favors the bigger schools. So, I believe the most common public policy decision, raising teacher pay, will prove significant in laying the groundwork for higher test scores. This leads to the final hypothesis: I believe that schools that pay teachers better in their beginning salary will have higher performing students. The top paying salary will not make much of a difference because very few teachers stay employed long enough to reach that pay bump. All in all, these factors will be tested to assess school performance, but also some of the surrounding variables that may lift up or tear down the students' education.

For the second experiment, district sizes were compared against each other. As was the case for the previous experiment, smaller districts tend to have less funding per student, lower teacher pay on average, and fewer programs for career and collegiate readiness. Sadly, as is shown in figure one in the appendix, many schools fall into the label of smaller districts. More than half of all Arkansas school districts, in fact, would be called "Tiny Districts" based on the data in my research, containing less than one thousand students. "Giant Districts," those

containing more than five thousand students, include close to one-third of all Arkansas elementary and secondary students, leaving much of the state playing catch up. In many of the rural areas across the state, families do not have the choice to uproot and move a couple towns over to the bigger district.

My expectation was that the smaller district would not be as well off. So, in the case of students on the free or reduced lunch program, my hypothesis was that the smaller schools would carry a larger percentage. For the withdrawal rates, I had my prior understanding driven by the lack of schools in a given area. For the most part, smaller schools are isolated. This led me to form the hypothesis that small schools would have a lower withdrawal rate than their counterparts. In the arena of disciplinary action, the lack of competition again steered me in the direction of seeing smaller schools unfavorably. I believed that smaller schools would have a similar rate of punishment but a lower rate of expulsion, suspension, and detention. This came from the understanding that larger districts were better equipped with a higher amount of teachers able to perform disciplinary tasks such as Saturday school or in-school suspension. The low number of students and the lack of outside options also moved me to hold smaller districts at a disadvantage against expelling students or giving them detention.

CHAPTER III

EXPERIMENT ONE: FACTORS OUTSIDE OF SCHOOL

Starting with the first hypothesis, comparing the median income to the raw test scores, the results proved to be significant. Using a crosstabulation procedure, all thirty-four schools were included in the procedure. Each of the four subjects was tested in its own procedure. The table provided enough of a statistical significance to say the results were worthwhile. For the English test scores procedure, the approximate significance was .001. For the Math, Science, and Reading procedures, the approximate significance was less than .001. This links income and test scores to the hip, making the two variables practically inseparable.

For the second hypothesis, a one-way ANOVA test was run with the test scores as the dependent variables and a recoded crime variable as the independent variable. All thirty-four schools were included in the procedure, as well as all four subjects of test scores. The crime data was split into four groups, moving from low to moderate to high to extremely high crime. In English, the approximate significance was .078, indicating some form of relationship, but not enough to justify one of real importance. In Math, the significance was lower, .108, indicating less of a relationship. In Science, the data concluded with a .042 approximate significance, enough to spot a real relationship, important because most of the schools had less than 50% of their students failing to pass the benchmark. In Reading, a near relationship was spotted, topping at .076. Given the back and forth, there is not much to show in signifying a close relationship, but the results were close.

For the third hypothesis, another one-way ANOVA procedure was run with the test scores as the dependent variables and a recoded government funding variable was included. The

variable was split into three groups: below average, average, and above average funding. The cutoff point for the below average group was set at $8000 per student. The average group was set between $8001 and $9500 per student. The above average group included any school that had more than $9501 per student. All thirty-four schools were included in the test, and all four subjects of test scores were run. In English, there was no sign of a relationship, boasting a .130 rate of significance. For Math, there was a small sign of a relationship at a .050 rate of significance, but for Science and Reading, there was no proof, citing a .109 and .238 rate, respectively. This does, however, for the most part, prove the hypothesis correct.

For the fourth procedure, a One-Sample T-Test was run to compare the means of the test scores and the school populations. All thirty-four schools were included in the test, and all four test score subjects were run in the test. The results did, in fact, prove a relationship between the school size and test scores, proving the hypothesis correct once more. Each test score subject came together with the same rate of significance, less than .001. This goes to prove that the school population can work to better the schools test scores as a whole.

For the final hypothesis, two different one-way ANOVA tests were run comparing the test scores first with the beginning salary for the teachers and the second with the top available salary for the teachers. All thirty-four schools were included in the test and all four subjects of tests were run in the process. For beginning salary, each subject but one of the tests proved a significant relationship, correlating higher beginning teacher salary and student performance. In English, there was an approximate rate of significance at .051. In Math, a relationship was shown at a .023 rate of significance. For Science, the greatest level of relationship was given at .007. Finally, for reading, the rate of significance showed some sign of a relationship but not enough to prove significant at .083. For top teacher salary, across English, Math, Science, and Reading,

each test showed a significance score of .589, .147, .091, and .765. Outside of Science, there was no evidence of a relationship showing anything.

CHAPTER IV

EXPERIMENT TWO: FACTORS INSIDE OF THE SCHOOL

Looking to the first hypothesis, comparing the rate among students on the free or reduced lunch payment program, I first used an Explore procedure to track the relation between the size of districts and the percentage of students on the program. The box and whiskers plot denotes the mean of percentages by the size of the districts. For this experiment, I separated the districts into five categories. "Tiny Districts" contain less than 1000 students. "Small Districts" have between 1001 and 2500 students. "Average Districts" have between 2501 and 3500 students. "Large districts" have between 3501 and 5000 students. "Giant Districts" have more than 5001 students. This will be the standard for all three hypotheses.

The hypothesis proved correct. "Tiny Districts" on average had a higher mean percentage of students on free or reduced lunches, including many districts having 100 percent of their students in the program. The range for "Tiny Districts" ran from one hundred to sixty-five percent with the mean running just under eighty percent. The same went for the "Small Districts." The disparity between schools was larger, with the range going from one hundred to fifty percent on free or reduced lunches. The mean was roughly sixty-three percent. "Average Districts" proved to be an outlier, running between sixty-one and thirty-seven percent. "Large districts had the largest differences between data points but still carried a mean percentage of fifty-nine percent, and "Giant Districts" also had a mean percentage of fifty-eight percent. This was reflective in the ANOVA procedure as well, carrying alongside the data with a high rate of significance.

The State Department of Education provided eighteen different categories for why students chose to leave for other schools, with the largest categories in number coming from enrolling in another public school, leaving for private school, deciding to homeschool, or moving to another state. However, other categories shed light on local social and economic demographics. While these categories prove to be small in number with many having a big, fat zero stretched across the data cell, the ones with entries should come as no surprise. For example, only six districts—Buffalo Island Central, Concord, Mayflower, Mountain View, Rose Bud, and Yellville Summit—had students leave for failing grades. Twenty-four districts reported long-term suspensions or expulsions. Twenty-eight districts reported more than five students leaving school over supposed lack of interest. Fifty-six districts reported students who left by incarceration, with Springdale and North Little Rock reporting six students a piece. Decatur School District was the only district who reported students leave over a reported "economic hardship." However, the purpose for this section was to see the total mobility of students, which students proved capable of leaving for a different or better school.

In the breakdown for disciplinary action by district, I joined all factors and categories dealing with suspension, all reasons for expulsion, and different forms of detention, either "after school" or "Saturday school." After that, I found the percentage of the student body receiving any sort of punishment, as well as the percentage of the student body receiving detention, suspension, or expulsion. My hypothesis in this section is that smaller districts (what I will label either "Tiny" or "Small Districts") will have a lower percentage of students receiving detention, suspension, or expulsion, but will have a similar percentage of students who receive any form of punishment, which includes warnings, parent-teacher meetings, and corporal punishment. This is due to the lack of staff and overall funding that would allow for faculty and staff to equitably carry out more severe disciplinary actions. In the procedure, the data did not prove to have a high

rate of significance in the ANOVA procedure, which was incredibly disappointing. However, comparing "Small Districts" rate of withdrawal against "Large Districts," the Independent Samples T-Test proved to be highly significant. This could prove my hypothesis correct that smaller districts do find a lower withdrawal rate, but across all district sizes, the findings were inconclusive to denote a relationship.

For the final procedures dealing with disciplinary actions, the first half of my hypothesis was correct. Using an Explore procedure, smaller districts did not look to have a lower rate of punishment than larger districts. The rates of punishment were all roughly the same. This did, however, prove the second half of my hypothesis false. District size did not have an effect on the rate of expulsion, suspension, and detention.

CHAPTER V

LIMITS TO THE RESEARCH

The limits to the extent of this research project are obvious: time and effort. With the statistics for every school in the state at my fingertips, I could have hunkered down and nailed out every possible school across all grades into my dataset. That was not the case in my final product. Not only that, but in the summary and results of the project, the number of variables fail to disclose the full picture of socioeconomic and educational disparities. The state Department of Education also has summary test score statistics going back many years, which would have allowed me to develop and chart the changes among the schools for a longer period, potentially opening the doors to different results. That was not the case in this paper.

Given the amount of data available and the amount of time I had for the paper, I did not have enough time to track changes in the schools. I used enough variables to display the story behind way the schools were underperforming, but it was not enough to dictate the changes throughout the years. In addition, I zeroed in on the tenth graders in the 2020-21 school year as a basic benchmark for those preparing for college and potentially taking AP's. This left several grades out of the picture. This meant that some schools could potentially have their tenth-grade class as an outlier of incredibly bad or good performance, but that was not correctly reflected in my research.

Many pieces of legislation and individual decisions marked a decades-long fight for racial and gender minorities to receive their just due, not only to live where they would like to live, but also to have the financial stability to educate their kids how they would like to educate. While many school choice programs are moving through state legislatures, the greatest mode of

school choice in the country is by closing up shop at one's home and moving to another one. Those individual decisions would not be able to be accurately reflected in this research. Within each school, there are hundreds of individuals, in some cases thousands, who make the decision each day to say either "Yes!" or "No!" to receive their education. Sadly though, a simple dataset will not be able to change the minds of those who said, "No."

As for the second experiment, dedicating a different procedure to each section of the category would not prove noteworthy results. If the data set was closer to the amount in the first experiment, pinpointing different categories like "Enrolled in Private School" or "Expelled for Drugs" could produce some interesting connections, but since every Arkansas school district was used, some punches had to be pulled. If everything went the way I hoped, this project could have had fifteen different experiments across multiple mediums inside and outside the school, but as a graduating senior, there is only so much time in the day, and so much time to do research to properly balance an academic schedule.

For the procedures over disciplinary action, it was more understandable to realize that districts will use means of suspension, expulsion, and detention to best compensate with the amount of faculty and staff they have available. Larger districts showed a higher amount of detention and in-school suspensions, which makes sense because they have the means to do so, and smaller districts used other means like out-of-school suspension.

My categories also could have been further refined. If I was able to use the Arkansas Athletics Associations categories for schools and districts, that might have made things easier, but I made the most of the data available. In order to find an equitable medium, I looked at the total number of nearly fourteen thousand districts across almost fifty million students and made 3500 a safe average for the district size. This goes for a national average, not Arkansas. If this

was the case, the numbers would be greatly skewed, and the average would be a lot smaller, considering more than half of the districts have less than one thousand students.

CHAPTER VI

CONCLUSION

Many of my hypotheses did, in fact, prove to be correct, with the median income proving to be the most significant. Adding crime, government funding, and teacher salaries into the picture goes to show how complex the education system has become. These are only a few of the variables that every state department of education and legislature has to deal with year after year. One of the most eye-opening findings came through the results of beginning teacher salary. I believe it is tantamount for the beginning salary to be raised in the lower income areas, which calls on state legislatures to invest more money into the low-income communities who have been squeaking by the bare minimum for so long.

The greatest signs of relationship showed in either Math or Science, the lowest performing categories across all schools, which means that anything can help the struggling Math and Sciences. There are plenty of programs that allow for students to go into low-income communities, work for the schools for a few years, and walk out with a M.A. in Education. I believe such programs would benefit Arkansas. Rarely will the teacher see the day when they can gain the top-level salary. Closing the gap will help alleviate some of the disparities. Not only that, but there must be additional oversight in how the dollars per student is being spent. In the future, it seems that many of the low-performing schools in low-income communities will continue to consolidate across the state. The smaller schools will no longer be able to thrive in the same way.

In the second experiment, some of the hypotheses did prove correct. Smaller districts do tend to rely on free or reduced lunch programs at a higher rate. Withdrawal rate did not show a

significant correlation, but there were certain schools like the Arkansas Connections Academy and the Arkansas Virtual Academy that showed such large withdrawal rates in the last school year that it had a large overall effect on the rest of the districts in the group. However, smaller districts do pose a threat of closure that larger districts do not even bat an eyelash over. Disciplinary action, too, did not carry over a high rate of significance, but the correlations might have to do more with geography than district size. The relationships exist, but my research might not prove to display the full picture.

There is a significant question to be asked, however. What do the findings have to do now that LEARNS has been signed into law? Teachers will be paid more, parents will have enhanced choice, and public schools will no longer have the monopoly in much of Arkansas education. Private and charter schools have a presence in Central and Northwest Arkansas, but new schools will continue to pop up in the coming decades. Change is good, and in a state like Arkansas, change in education is necessary. In Arkansas education, any conscious voter or policymaker can agree that something had to change to mitigate the issues plaguing tens of thousands of students. As previously mentioned, the Arkansas LEARNS Act is the Sanders Administration's attempt to "do something," but this is where my ideological leanings will show face. However, I will approach the situation as pragmatically as possible.

For the sake of the students, *something* had to change in Arkansas education, but that does not mean that what was done should automatically be celebrated. In the case of smaller districts, the amount of funding per student might not change. This should be incredibly weary. The school budget will now be due for some massive shift now that teachers will start at $50,000 a year. The money going from school boards to the pockets of parents in the near future will lead to further questions on the security of government funding. Parents taking charge in directing

funds away from their neighborhood schools toward private, public charter, or homeschooling spells further worries for the future of the public system.

The funding questions might mean that there will not be as many teachers hired to shave off the price hikes for talent for some districts. It might also mean that pay raises will not come near as often for teachers taking summer classes toward a Master's degree or extra certification. This is not me saying that these situations will inevitably happen. This is me saying that these are fair causes for concern. Little Rock Central, Bentonville, and Bryant will be fine, but maybe not. A dear friend told me in recent days that a contract social worker in a large district will receive a large pay cut. This does not spell a bright future for janitors, school nurses, or any non-educator salary. It does bring to question the state of tiny districts like Lavaca and Fouke? These changes could be drastic, but pay raise also does not confirm that *better* teachers will be joining the district. Moving from Little Rock to Blytheville or Newport would be something getting used to, no matter the pay. Telling parents the choice is in their hands does not confirm they will make the *right* decision for their child's education.

No school, regardless of how great they may be, can absolutely save a child from a life of poverty and crime, but they do play a part. The free and reduced lunch programs have saved thousands of kids in this state, because it has become the only reliable source of food in their young lives. Part of that has to do with a lack of parental figures in the students' lives. Some of it has to do with parents relying on the district to make their student's lunch, so they do not have to. The roles of teachers, administrators, mentors can open doors for kids to new opportunities in athletics or the arts. One single class period can turn on the lightbulb toward a future vocation.

On the other hand, it goes without saying that where a student is raised plays a large part in where the education he will receive. Little Rock Schools received additional funding from the city budget that dwarfs the funding from rural areas. Crime rates and poverty rates are different

vary across the state, and no education policy plan can create the infrastructure necessary to lift thousands of Arkansans out of poverty or crime. The effect of education plans like LEARNS remains to be seen, but the Sanders administration has to tackle the disparities in other areas across the state.

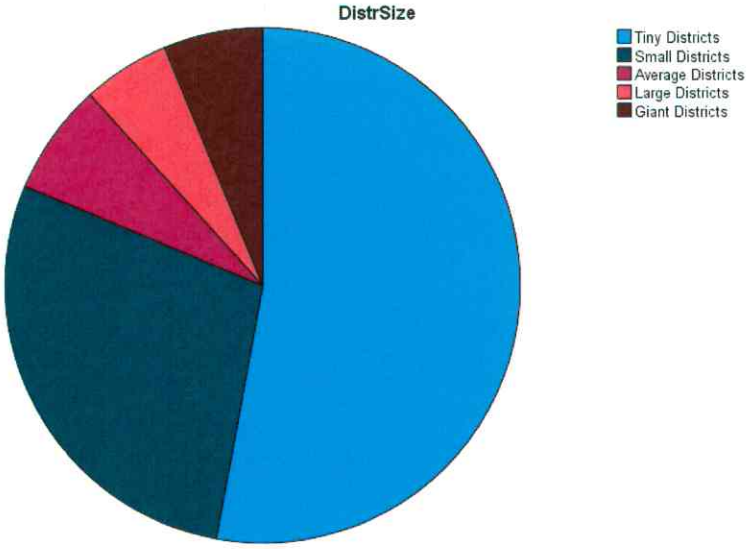
Education disparity is real, because the disparity between schools, households, and livelihoods is real as well. Will the LEARNS Act be able to lower the gap? Possibly. It remains to be seen how much the new system will survive Court challenges. Will it rectify all the wrongs that plague Arkansas citizens? Not a chance. The education problem is a microcosm of the government problem. Relying on government to provide for every need will not solve our issues nor will getting rid of it. Why? We are broken, fallen people, and it is not up to the government to solve every problem in our lives. If that is the case, our world will be closer to Huxley's *Brave New World* than "America the Beautiful."

APPENDIX I

GRAPHS, CHARTS, AND PROCEDURE TABLES

Figure One: District Size in Arkansas for 2021-2022 Academic Year

Tiny Districts - 81,788 Students
Small Districts - 107,725 Students
Average Districts - 53,472 Students
Large Districts - 54,369 Students
Giant Districts - 175,651 Students
Statewide Total - 473,005 Students



EXPERIMENT ONE: Factors Outside of School

Hypothesis One: Crosstabulations Procedure for Median Household Income

English

Directional Measures

			Value	Asymptotic Standard Error [a]	Approximate T [b]	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.385	.113	3.254	.001
		EngPERFORM Dependent	.461	.134	3.254	.001
		RelIncome Dependent	.331	.100	3.254	.001
Nominal by Interval	Eta	EngPERFORM Dependent	.541			
		RelIncome Dependent	.831			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Math

Directional Measures

			Value	Asymptotic Standard Error [a]	Approximate T [b]	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.444	.118	3.563	<.001
		MathPERFORM Dependent	.539	.139	3.563	<.001
		RelIncome Dependent	.377	.105	3.563	<.001
Nominal by Interval	Eta	MathPERFORM Dependent	.629			
		RelIncome Dependent	.899			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Science

Directional Measures

			Value	Asymptotic Standard Error [a]	Approximate T [b]	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.472	.112	4.019	<.001
		SciPERFORM Dependent	.573	.133	4.019	<.001
		RelIncome Dependent	.401	.099	4.019	<.001
Nominal by Interval	Eta	SciPERFORM Dependent	.661			
		RelIncome Dependent	.931			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Reading

Directional Measures

			Value	Asymptotic Standard Error [a]	Approximate T [b]	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.472	.112	4.019	<.001
		SciPERFORM Dependent	.573	.133	4.019	<.001
		RelIncome Dependent	.401	.099	4.019	<.001
Nominal by Interval	Eta	SciPERFORM Dependent	.661			
		RelIncome Dependent	.931			

a. Not assuming the null hypothesis.

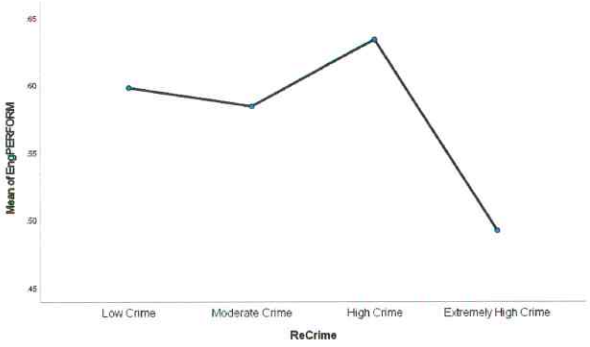
b. Using the asymptotic standard error assuming the null hypothesis.

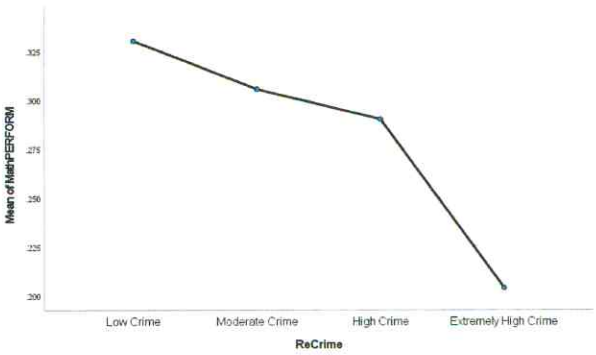
Hypothesis Two: ANOVA Table for Area Crime Rate

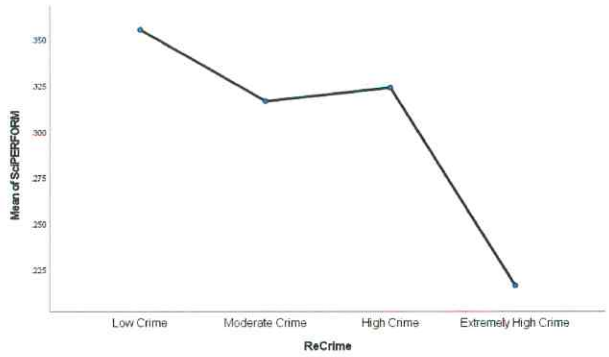
ANOVA

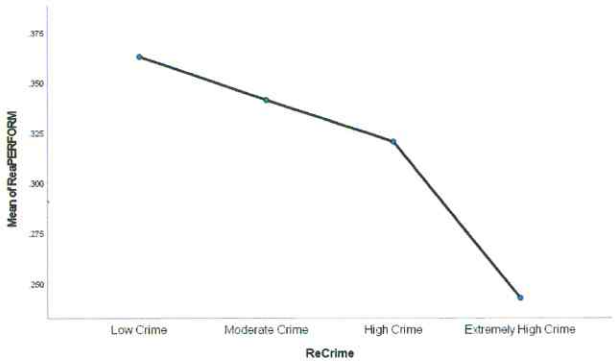
		Sum of Squares	df	Mean Square	F	Sig.
EngPERFORM	Between Groups	.093	3	.031	2.510	.078
	Within Groups	.369	30	.012		
	Total	.462	33			
MathPERFORM	Between Groups	.093	3	.031	2.204	.108
	Within Groups	.421	30	.014		
	Total	.514	33			
SciPERFORM	Between Groups	.103	3	.034	3.094	.042
	Within Groups	.333	30	.011		
	Total	.436	33			
ReaPERFORM	Between Groups	.085	3	.028	2.533	.076
	Within Groups	.337	30	.011		
	Total	.422	33			

Means Plots







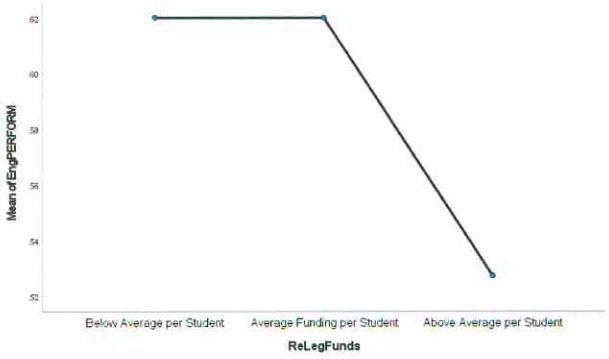


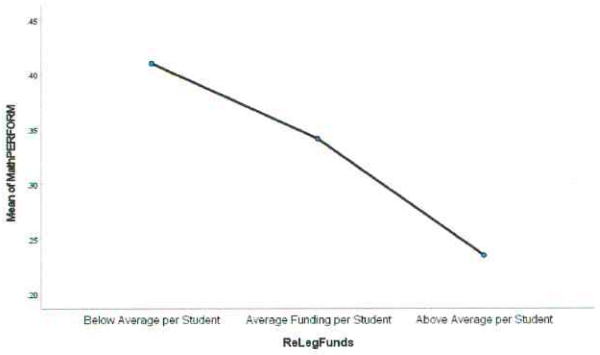
Hypothesis Three: ANOVA Table for State Legislature Funding

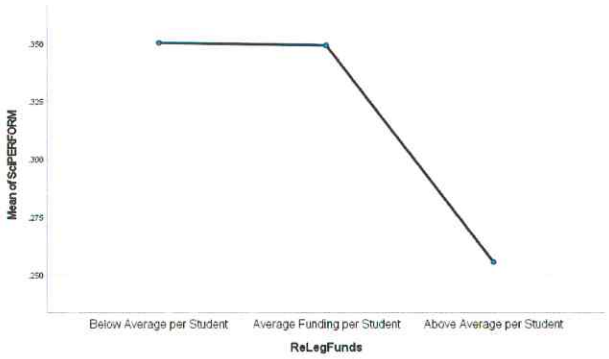
ANOVA

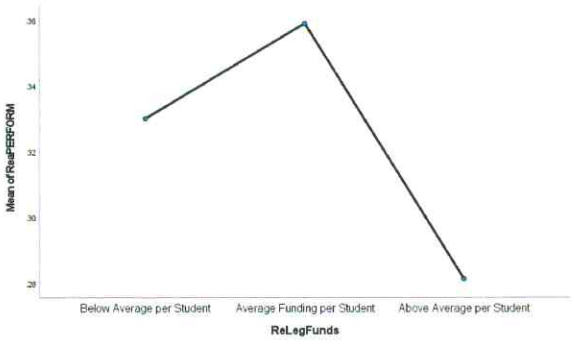
		Sum of Squares	df	Mean Square	F	Sig.
EngPERFORM	Between Groups	.057	2	.028	2.182	.130
	Within Groups	.405	31	.013		
	Total	.462	33			
MathPERFORM	Between Groups	.090	2	.045	3.306	.050
	Within Groups	.424	31	.014		
	Total	.514	33			
SciPERFORM	Between Groups	.058	2	.029	2.384	.109
	Within Groups	.378	31	.012		
	Total	.436	33			
ReaPERFORM	Between Groups	.037	2	.019	1.504	.238
	Within Groups	.385	31	.012		
	Total	.422	33			

Means Plot









Hypothesis Four: One Sample T-Test for School Size

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
EngPERFORM	34	.5518	.11831	.02029
MathPERFORM	34	.2650	.12478	.02140
SciPERFORM	34	.2800	.11492	.01971
ReaPERFORM	34	.3009	.11307	.01939
S-Size	34	203.97	195.801	33.580

One-Sample Test

Test Value = 0

	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
S-Size	6.074	33	<.001	<.001	203.971	135.65	272.29
EngPERFORM	27.194	33	<.001	<.001	.55176	.5105	.5930
MathPERFORM	12.383	33	<.001	<.001	.26500	.2215	.3085
SciPERFORM	14.207	33	<.001	<.001	.28000	.2399	.3201
ReaPERFORM	15.517	33	<.001	<.001	.30088	.2614	.3403

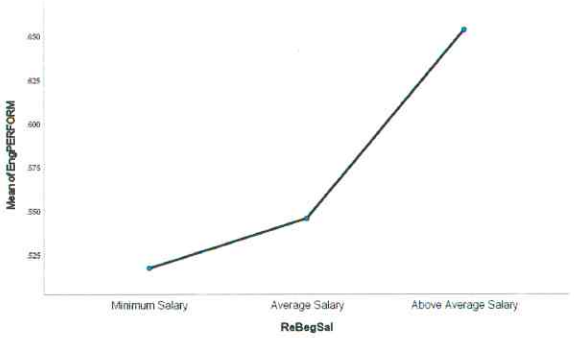
Hypothesis Five: ANOVA Table for Teacher Pay

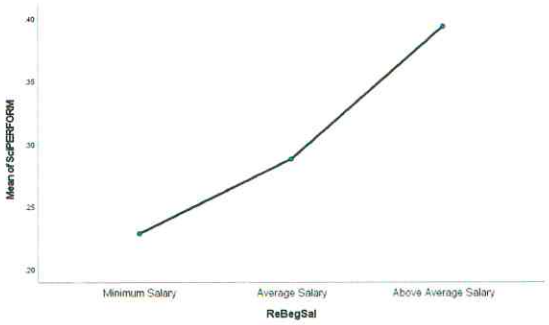
Beginning Salary

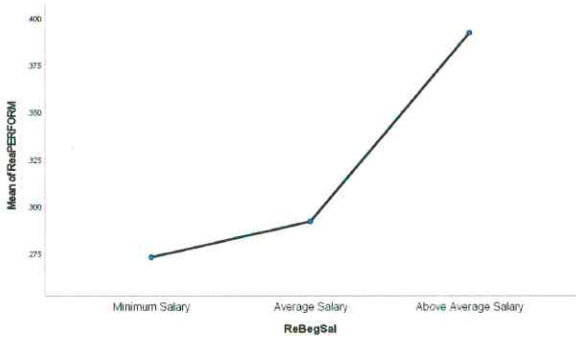
ANOVA

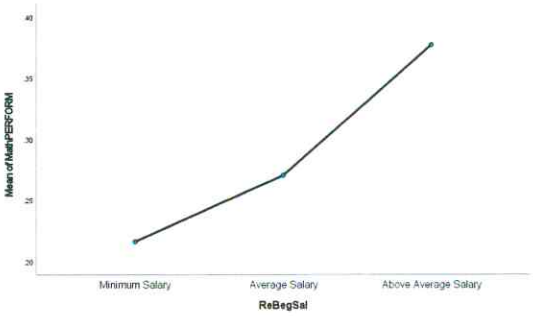
		Sum of Squares	df	Mean Square	F	Sig.
EngPERFORM	Between Groups	.081	2	.040	3.291	.051
	Within Groups	.381	31	.012		
	Total	.462	33			
MathPERFORM	Between Groups	.111	2	.056	4.279	.023
	Within Groups	.403	31	.013		
	Total	.514	33			
SciPERFORM	Between Groups	.118	2	.059	5.782	.007
	Within Groups	.317	31	.010		
	Total	.436	33			
ReaPERFORM	Between Groups	.063	2	.031	2.697	.083
	Within Groups	.359	31	.012		
	Total	.422	33			

Means Plot







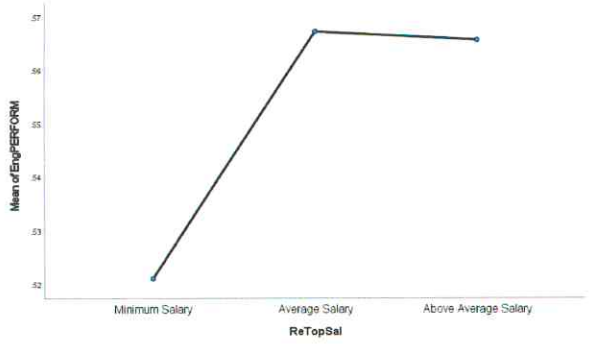


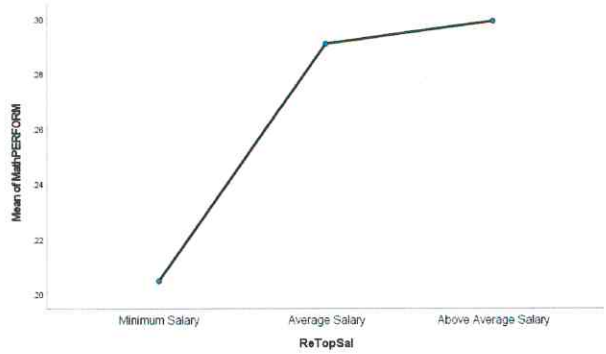
Top Salary

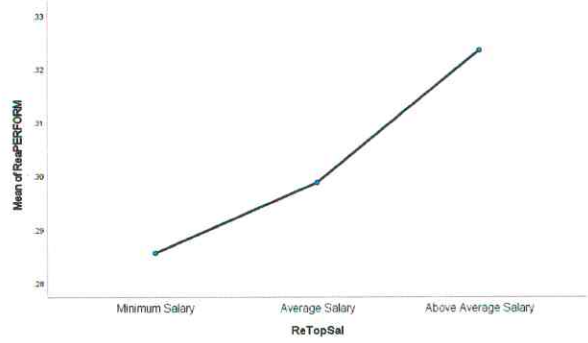
ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
EngPERFORM	Between Groups	.015	2	.008	.538	.589
	Within Groups	.446	31	.014		
	Total	.462	33			
MathPERFORM	Between Groups	.060	2	.030	2.041	.147
	Within Groups	.454	31	.015		
	Total	.514	33			
SciPERFORM	Between Groups	.062	2	.031	2.595	.091
	Within Groups	.373	31	.012		
	Total	.436	33			
ReaPERFORM	Between Groups	.007	2	.004	.270	.765
	Within Groups	.415	31	.013		
	Total	.422	33			

Means Plot







APPENDIX II

CHARTS, GRAPHS, AND PROCEDURE TABLES (CONT'D)

EXPERIMENT TWO: FACTORS INSIDE THE SCHOOL

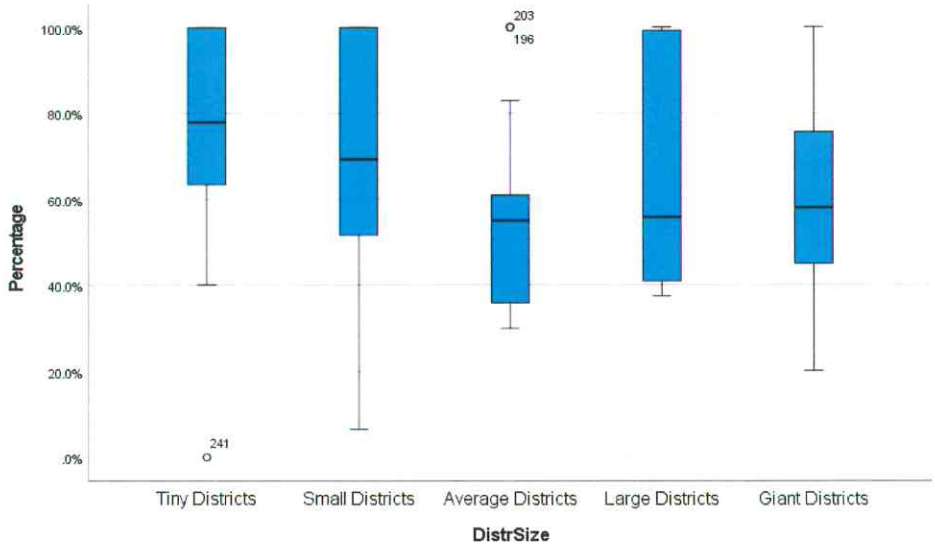
Hypothesis One: Explore and ANOVA Procedure for Free/Reduced Lunches

Explore Procedure

Case Processing Summary

		Cases					
		Valid		Missing		Total	
	DistrSize	N	Percent	N	Percent	N	Percent
Percentage	Tiny Districts	143	99.3%	1	0.7%	144	100.0%
	Small Districts	71	100.0%	0	0.0%	71	100.0%
	Average Districts	18	100.0%	0	0.0%	18	100.0%
	Large Districts	14	100.0%	0	0.0%	14	100.0%
	Giant Districts	16	100.0%	0	0.0%	16	100.0%

Box and Whiskers Plot



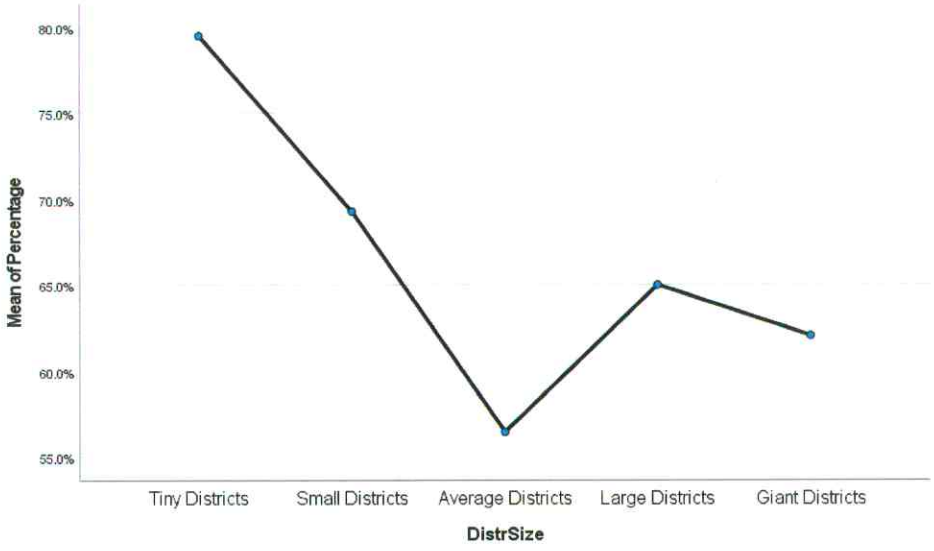
ANOVA Procedure

ANOVA

Percentage

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14781.849	4	3695.462	7.491	<.001
Within Groups	126784.998	257	493.327		
Total	141566.847	261			

Means Plot



Hypothesis Two: Independent Samples T-Test and ANOVA Procedure for Withdrawal Rates

Independent Samples T-Test

Group Statistics

	SS	N	Mean	Std. Deviation	Std. Error Mean
Total	Small	136	48.84	25.089	2.151
	Large	11	870.64	311.527	93.929

Test Table

Independent Samples Test

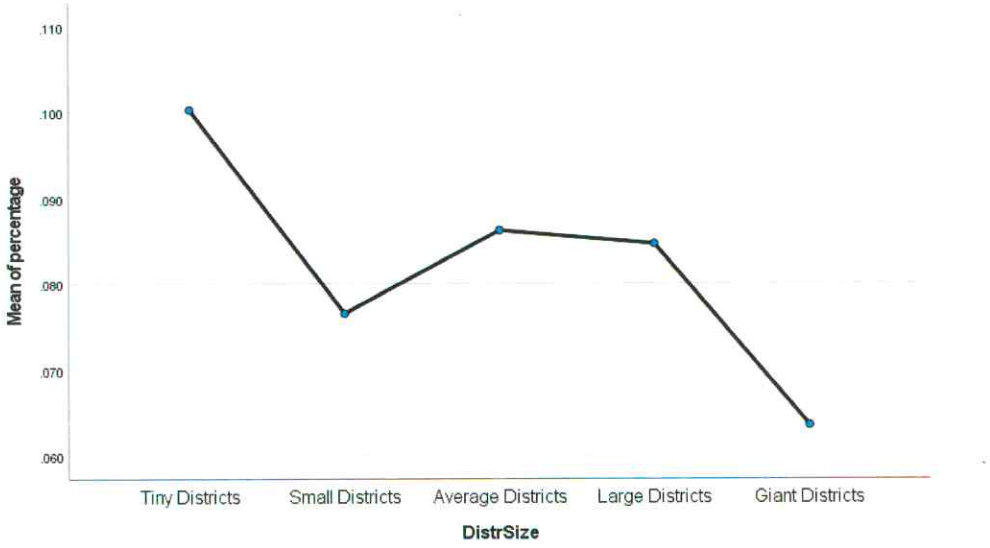
		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance		Mean	Std. Error	99% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Difference	Difference	Lower	Upper
Total	Equal variances assumed	202.312	<.001	-30.728	145	<.001	<.001	-821.798	26.744	-891.605	-751.991
	Equal variances not assumed			-8.747	10.010	<.001	<.001	-821.798	93.954	-1119.493	-524.104

ANOVA Procedure

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
percentage	Based on Mean	1.061	4	252	.377
	Based on Median	.636	4	252	.637
	Based on Median and with adjusted df	.636	4	147.673	.637
	Based on trimmed mean	.629	4	252	.642

Means Plot



Hypothesis Three: Explore Procedure for Disciplinary Actions

Percentage of Students Receiving Punishment

Descriptives

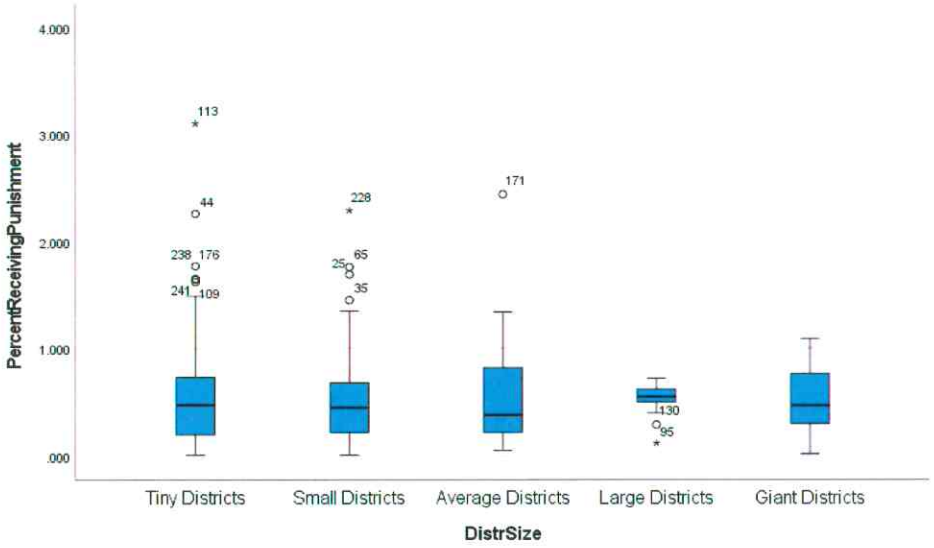
	DistrSize			Statistic	Std. Error
PercentReceivingPunishment	Tiny Districts	Mean		.54146	.041440
		95% Confidence Interval for Mean	Lower Bound	.45947	
			Upper Bound	.62345	
		5% Trimmed Mean		.49064	
		Median		.47500	
		Variance		.223	
		Std. Deviation		.472488	
		Minimum		.010	
		Maximum		3.100	
		Range		3.090	
		Interquartile Range		.533	
		Skewness		2.108	.212
		Kurtosis		7.089	.422
	Small Districts	Mean		.53192	.051349
		95% Confidence Interval for Mean	Lower Bound	.42956	
			Upper Bound	.63428	
		5% Trimmed Mean		.48805	
		Median		.45000	
		Variance		.192	
		Std. Deviation		.438725	
		Minimum		.010	
		Maximum		2.290	
		Range		2.280	
		Interquartile Range		.470	
		Skewness		1.607	.281
		Kurtosis		3.409	.555
	Average Districts	Mean		.63059	.149490
		95% Confidence Interval for Mean	Lower Bound	.31368	
			Upper Bound	.94749	
		5% Trimmed Mean		.56232	
		Median		.38000	
		Variance		.380	
		Std. Deviation		.616365	
		Minimum		.050	
		Maximum		2.440	
		Range		2.390	
		Interquartile Range		.780	
		Skewness		1.801	.550
		Kurtosis		3.637	1.063
	Large Districts	Mean		.52385	.046692
		95% Confidence Interval for Mean	Lower Bound	.42211	
			Upper Bound	.62558	
		5% Trimmed Mean		.53538	
		Median		.55000	
		Variance		.028	
		Std. Deviation		.168352	
		Minimum		.120	
		Maximum		.720	
		Range		.600	
		Interquartile Range		.190	
		Skewness		-1.330	.616
		Kurtosis		1.642	1.191
	Giant Districts	Mean		.51438	.073416
		95% Confidence Interval for Mean	Lower Bound	.35789	
			Upper Bound	.67086	
		5% Trimmed Mean		.50986	
		Median		.47000	
		Variance		.086	
		Std. Deviation		.293666	
		Minimum		.020	
		Maximum		1.090	
		Range		1.070	
		Interquartile Range		.492	
		Skewness		.261	.564
		Kurtosis		-.672	1.091

Percentage of Students Receiving Expulsion, Suspension, or Detention

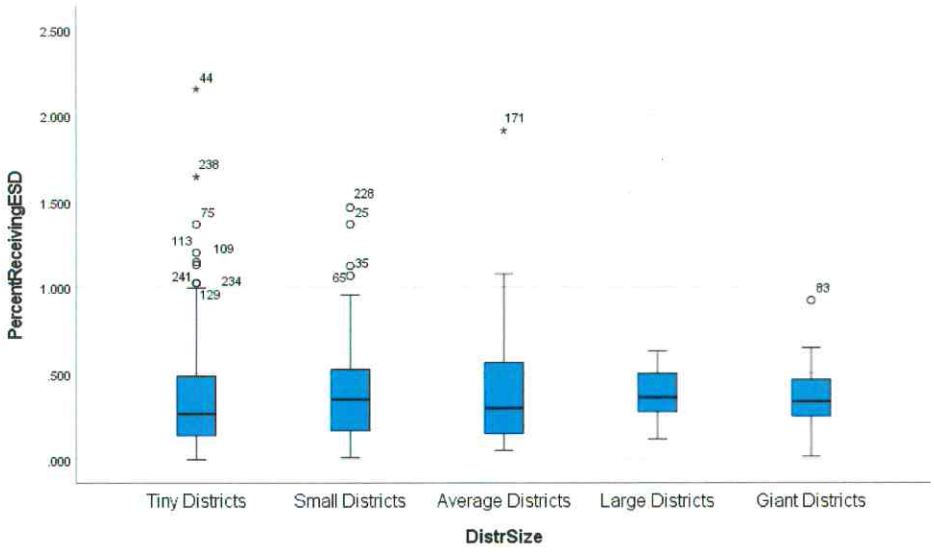
Descriptives

	DistrSize			Statistic	Std. Error
PercentReceivingESD	Tiny Districts	Mean		.36659	.029653
		95% Confidence Interval for Mean	Lower Bound	.30792	
			Upper Bound	.42526	
		5% Trimmed Mean		.32864	
		Median		.26446	
		Variance		.114	
		Std. Deviation		.338101	
		Minimum		.000	
		Maximum		2.155	
		Range		2.155	
		Interquartile Range		.347	
		Skewness		2.177	.212
		Kurtosis		6.987	.422
	Small Districts	Mean		.38256	.035532
		95% Confidence Interval for Mean	Lower Bound	.31172	
			Upper Bound	.45339	
		5% Trimmed Mean		.35345	
		Median		.34908	
		Variance		.092	
		Std. Deviation		.303584	
		Minimum		.010	
		Maximum		1.464	
		Range		1.454	
		Interquartile Range		.357	
		Skewness		1.435	.281
		Kurtosis		2.599	.555
	Average Districts	Mean		.46178	.114169
		95% Confidence Interval for Mean	Lower Bound	.21975	
			Upper Bound	.70381	
		5% Trimmed Mean		.40404	
		Median		.29846	
		Variance		.222	
		Std. Deviation		.470730	
		Minimum		.053	
		Maximum		1.910	
		Range		1.857	
		Interquartile Range		.515	
		Skewness		2.093	.550
		Kurtosis		4.984	1.063
	Large Districts	Mean		.38158	.040117
		95% Confidence Interval for Mean	Lower Bound	.29417	
			Upper Bound	.46898	
		5% Trimmed Mean		.38250	
		Median		.35905	
		Variance		.021	
		Std. Deviation		.144645	
		Minimum		.119	
		Maximum		.628	
		Range		.509	
		Interquartile Range		.243	
		Skewness		.024	.616
		Kurtosis		-.608	1.191
	Giant Districts	Mean		.38103	.053969
		95% Confidence Interval for Mean	Lower Bound	.26600	
			Upper Bound	.49607	
		5% Trimmed Mean		.37133	
		Median		.33581	
		Variance		.047	
		Std. Deviation		.215875	
		Minimum		.016	
		Maximum		.921	
		Range		.904	
		Interquartile Range		.226	
		Skewness		.940	.564
		Kurtosis		1.549	1.091

Box and Whiskers Plot: Students Receiving Punishment



Box and Whiskers Plot: Students Receiving Expulsion, Suspension, or Detention



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